

CLAIMS:

1. An optical recording medium comprising at least one liquid crystalline (LC) layer including an anisotropic aligned LC polymer network, low molecular weight molecules, at least part of it being LC and orientable and at least part of it having functional groups for effecting hydrogen bonding with each other, and optionally a dye.

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2. The medium of claim 1 wherein the low molecular weight molecules are a mixture of LC molecules not having functional groups for effecting hydrogen bonding with each other and molecules having functional groups for effecting hydrogen bonding with each other.

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3. The medium of claim 1 or 2 wherein at least part of the low molecular weight molecules with functional groups is liquid crystalline.

4. The medium of any one of claims 1 to 3 wherein the medium comprises a fluorescent dye.

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5. The medium of any one of claims 1 to 4 wherein the polymer network comprises 0.1 to 40 wt.% and the low molecular weight molecules 60-99.9 wt.% of the LC layer.

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6. The medium of any one of claims 2 to 4 wherein the polymer network comprises 0.1 to 40 wt.%, preferably 5-10 wt.%, and the low molecular weight molecules 60-99.9 wt.%, preferably 85-95 wt.%, of the LC layer, and the ratio of low molecular weight molecules with and without functional groups is from 1:30 to 30:1.

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7. The medium of any one of claims 1 to 6 comprising at least two LC layers.

8. The medium of any one of claims 1 to 7 wherein at least one of the LC layers comprises pre-recorded record control information or write-once information.

9. The medium of any one of claims 1 to 8 wherein at least one of the LC layers is provided on a substrate.
- 5 10. A method for manufacturing the optical recording medium of any one of claims 1-9 comprising the steps:
- a. applying onto a substrate at least one LC layer comprising LC monomers, low molecular weight molecules at least part being LC and orientable and at least part having functional groups for effecting hydrogen bonding with each other, and optionally a dye;
 - 10 b. heating the mixture to above a phase transition temperature;
 - c. orienting the LC monomers into one direction; and
 - d. converting the oriented LC monomers to a polymeric network.
11. The method according to claim 10 wherein the oriented LC monomers are
15 converted to a polymeric network by actinic irradiation.
12. A method for writing information in an area of the optical recording medium of any one of claims 1-9 wherein at least one area in at least one of the LC layers is heated to above a phase transition temperature, and provided with optically readable information by
- 20 a. orienting in said area the LC molecules and optionally the dye to a direction that is different from the direction of the orientation of the polymeric network;
 - b. cooling said area of the LC layer to below said phase transition temperature to freeze the direction of the oriented LC molecules and optionally the dye; and
 - c. optionally repeating steps a. and b.
- 25 13. The method according to claim 12 wherein the LC molecules and optionally the dye are oriented by applying an electric or magnetic field to the LC layer.